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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,287	03/01/2002	Peter G. Borden	BOX014 US	6609
7590	03/03/2005		EXAMINER VERBITSKY, GAIL KAPLAN	
PATENT COUNSEL LEGAL AFFAIRS - APPLIED MATERIALS, INC. P.O. BOX 450A SANTA CLARA, CA 95052			ART UNIT 2859	PAPER NUMBER

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**supplemental
Notice of Allowability**

Application No.

10/090,287

Examiner

Gail Verbitsky

Applicant(s)

BORDEN ET AL.

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to IDS filed on 07/06/2004 and 11/27/2004.
2. ☐ The allowed claim(s) is/are _____.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>07/06/04, 11/27/04</u> | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

SUPPLEMENTAL OFFICE ACTION

Examiner's Statement of Reasons for Allowance

1. Claims 1-6, 9-17, 28-31 are allowed because the prior art fail to teach a method and apparatus for determining presence or absence of a defect in a semiconductor wafer comprising applying heat to a conductive structure being periodic in space in a direction, determining absence of the defect in the conductive structure on finding periodicity in the plurality of measurements, the periodicity is related to periodicity of the conductive structure, in combination with the remaining limitations of claims 1-6, 9-17, 28-31.
2. Claims 18-21, 34-39 are allowed because the prior art fail to teach a method for determining the quality of a conductive structure, applying heat on the conductive structure being periodic in space along a direction, measuring a first phase difference between change of the conductive structure and modulation of said heat source, analyzing whether said phase difference is larger than a second phase difference being detected with a second conductive structure that is non-defective, in combination with the remaining limitations of claims 18-21, 35-39.
3. Claims 22-27 are allowed because the prior art fail to teach a method for determining the quality of a conductive structure, applying heat on the conductive structure, wherein said conductive structure comprises a plurality of via chains, the heat applied simultaneously to more than one via chain, varying the frequency of modulation, measuring a change in temperature of said conductive structure as a function of the frequency, in combination with the remaining limitations of claims 22-27.

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4. Claims 32-33 are allowed because the prior art fail to teach a method of identifying a defect in a semiconductor wafer using a first beam to apply heat to a conductive structure, the structure being periodic in space, using a second beam to measure a signal indicative of temperature of a portion of the conductive structure, determining presence of the defect depending on spatial periodicity of the plurality of measurements, in combination with the remaining limitations of claims 32-33.

Information Disclosure Statement

5. The information disclosure statement filed on November 27, 2004, after Notice of Allowability (June 04, 2004), not considered since it requires further consideration.

The information disclosure statement filed on July 06, 2004 has been considered.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication should be directed to the Examiner Verbitsky who can be reached at (571) 272-2253 Monday through Friday 8:00 to 4:00 ET.

GKV

Gail Verbitsky

Primary Patent Examiner, TC 2800



February 22, 2005